

REMARKS

As an initial matter, Applicant appreciates the thorough examination by the Examiner. Applicant understands that the Examiner has acknowledged its claim of foreign priority under 35 U.S.C. §119(a)-(d).

The Examiner's Objections

The Examiner objects to Figures 1 and 2 and requests that a legend (e.g., Prior Art) designate that the figures represent known embodiments of pipe joints.

The Examiner further objects to the Abstract and alleges that it contains language referring to the merits of the instant invention.

In response to the Examiner's objections, Applicant submits Replacement Sheets for Figures 1 and 2, and an amended Abstract addressing the Examiner's concerns as explained herein.

The Examiner's Rejections

The Examiner rejects claims 1-6 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,286,064 to Bridges. In response to the Examiner's rejections, Applicant submits amended claims and addresses the Examiner's concerns herein below.

Figures 1 and 2 Include Appropriate Legend

In the Office Action at page 2, the Examiner objects to Figures 1 and 2 and requests that a legend (e.g., Prior Art) designate that the figures represent known embodiments of pipe joints. As amended above, Figures 1 and 2 depicted in the respective Replacement Sheets now include the legend "Prior Art" as requested by the Examiner.

Abstract Does Not Include Meritorious Language

In the Office Action at pages 2-3, the Examiner objects to the Abstract and alleges that it contains language referring to the merits of the instant invention. As amended above, the Abstract does not include language referring to the merits of the instant invention. Specifically, Applicant has deleted the term “superior” appearing in the first sentence, and deleted the following sentence previously appearing as the second to the last sentence in the Abstract: “Therefore, the durability of the product is improved and, as well, the productivity of the pipe joint increases.”

Replacement Sheet Depicts Appropriate Figure 3

The Examiner will note that currently Figures 3 and 4 are identical. Figure 4 was inadvertently submitted for Figure 3 upon entry into the national phase in the United States. Thus, Figure 3 is incorrect while Figure 4 is correct. Applicant submits that the attached Replacement Sheet illustrating Figure 3 depicts the correct Figure 3 as filed in the original Korean patent application to which this application claims priority. Further, Applicant submits that the Replacement Sheet depicting Figure 3 properly illustrates an “exploded perspective view of a pipe joint, according to a first embodiment of the present invention” as set forth in the present description of drawings.

Amended Independent Claim 1 is Not Anticipated by Bridges

The Examiner rejects, among others, independent claim 1 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,286,064 to Bridges. Applicant disagrees with the Examiner's assessment of the structure of Bridges for the reasons set forth below.

Bridges

U.S. Patent No. 5,286,064 to Bridges discloses a sealing plate for use with a pipe coupling to prevent leakage of pipelines. Referring to Figures 1 and 2, the sealing plate 10 includes a pair of opposing axial edges 14, a pair of opposing circumferential edges 15, a pair of axial sealing pads 20 positioned on the axial edges 14, and a pair of circumferential sealing pads 40 positioned on the circumferential edges 15 of the plate. As depicted in Figure 3, the sealing plate 10 is used in conjunction with a circular pipe coupling 50 to prevent leakage in a pipeline.

Referring to the orientation of the sealing plate 10 and pipe coupling 50 illustrated in Figure 3, Bridges' coupling 50 includes opposing circumferential edges (i.e., left and right ends or edges of the coupling), opposing axial edges (i.e., upper and lower edges of the coupling depicted in solid and dashed lines above and below the numeral "52"), and an axial slit 52 defined by the opposing axial edges of the coupling. The coupling 50 of Bridges defines a longitudinal axis that extends between the pair of opposing circumferential edges (i.e., extending left to right as oriented in Figure 3), and a transverse axis extending between the upper and lower portions of the coupling (as oriented in Figure 3).

Referring to Figures 1 and 3, the circumferential edges 15 of the sealing plate 10 are spaced apart from the circumferential edges of the coupling 50. The spacing between the circumferential edges 15 of the sealing plate 10 and the circumferential edges of the

coupling 50 is best represented in the area surrounding the numerals “20” and “30” in Figure 3. This spaced relationship is further depicted in Figure 6 immediately below the outer lower edge of the clamping flanges 53. Thus, the circumferential edges 15 of the sealing plate 10 and the circumferential edges of the coupling 50 are offset with respect to one another. Stated differently, the respective edges are not coplanar with respect to transverse axes of the coupling 50 and sealing plate 10.

With reference to Figures 1 and 3, the axial sealing pads 20 of the plate 10 are secured to and extend along the axial edges 14 of the plate. Upon joinder of the sealing plate 10 and the coupling 50, the axial sealing pads 20 extend along the longitudinal axis of the coupling 50 as depicted in Figure 3.

The coupling 50 defines annular recesses 55 for receiving gaskets 60, wherein the recesses are spaced apart along the surface of the coupling. As shown in Figures 3 and 6, the recesses 55 are not only spaced apart with respect to each other, but are also spaced apart from the circumferential edges of the coupling 50. Referring to Figure 3, the coupling 50 has upper and lower parts, wherein each part has diameters that differ, but each part has at least one diameter that is identical to the other part. Thus, each respective part of Bridges' coupling has inconsistent diameters.

Referring to Figure 3, the upper (or left) part of the coupling 50 has one diameter defined the leftmost annular recess 55. The upper part of the coupling has another diameter defined by the remaining portions of the coupling to the immediate left (or edge) and right of the leftmost recess. Similarly, the lower (or right) part of the coupling 50 has one diameter defined the rightmost annular recess 55, and another diameter defined by the remaining portions of the coupling to the immediate right (or edge) and left of the rightmost recess. Stated differently, the diameters of the two parts of the coupling 50 defined by the annular recesses 55 differ from the diameters of the three remaining transverse parts of the coupling.

Accordingly, each of the upper and lower parts of the Bridges' coupling 50 has inconsistent diameters. Moreover the coupling 50 is not graduated (e.g., increasing in diameter) with respect to the upper and lower parts, thus the diameter of one part is the same as the diameter of the other part.

The coupling 50 further includes gaskets 60 that extend circumferentially within the annular recesses 55 and around the interior of the coupling. As described above, the sealing plate 10 includes circumferential sealing pads 40 that extend along circumferential edges 15 of the plate and, upon assembly, around portions of the circumference of the coupling. Thus, the gaskets 60 and the circumferential sealing pads 40 are positioned transverse to the longitudinal axis of the sealing plate 10 and the coupling 50.

The Circumferential Edges of Bridges' Plate and Coupling Are Not Coplanar with Respect to Transverse Axes of Plate and Coupling

As set forth above, the circumferential edges 15 of Bridges' sealing plate 10 are in a spaced relationship with respect to the circumferential edges of the coupling 50 (see Figures 1 and 3). Stated differently, the circumferential edges 15 of the sealing plate 10 and the circumferential edges of the coupling 50 define transverse axes that are offset and not coplanar (i.e., the respective edges do not form a planar edge surface). The Examiner argues that the coupling 50 and sealing plate 10 of Bridges are equivalent to the body part 10 and reinforcing unit 40 of the present invention.

Regarding claim 1 of the present invention, the Examiner argues that Bridges discloses each and every element to include all limitations appearing in claim 1. To the contrary, Applicant disagrees in view of amended claim 1 and the following explanation. Upon assembly of the present invention at least one circumferential edge of the body part 10, 10a and at least one circumferential edge of the reinforcing unit 40, 40a are substantially coplanar with respect to the transverse axes of the body part and reinforcing

unit. As set forth in Paragraph [0028] and illustrated in Figures 3 and 5, the reinforcing unit 40, 40a includes a stop means 42, 42a at a circumferential edge of the reinforcing unit. During assembly, the reinforcing unit 40, 40a is mounted to the body part 10, 10a. During mounting, the lower end of the body part 10, 10a is stopped by the stepped shape of the stop means 42, 42a (see Paragraph [0028] lines 10-14). In other words, a circumferential edge of the body part 10, 10a and the circumferential edge of the reinforcing unit 40, 40a are aligned (i.e., not spaced apart from one another). Thus, the circumferential edge of the body part 10, 10a and the circumferential edge of the reinforcing unit 40, 40a define transverse axes that are coplanar.

In contrast, Bridges discloses circumferential edges of the sealing plate 10 and the coupling 50 that are not aligned, but spaced apart. Moreover, the circumferential edges of the sealing plate 10 and the coupling 50 are non-planar. In other words, circumferential edges of the sealing plate 10 and the coupling 50 fail to define transverse axes that are coplanar. Thus, Bridges does not disclose each and every element, including the limitations set forth in amended claim 1, and therefore must be removed as a §102(b) reference.

Bridges Fails to Disclose Stop Means Extending Along Circumferential Edges of Reinforcing Unit

Bridges depicts axial sealing pads 20 of that are secured to and extend along the axial edges 14 of the plate 10. As used in connection with the coupling 50, the axial sealing pads 20 extend along the longitudinal axis of the coupling 50. The Examiner alleges that the axial sealing pads 20 of Bridges are equivalent to the stop means 42, 42a of the present invention.

With respect to claim 2, the Examiner argues that Bridges further discloses a reinforcing unit (i.e., sealing plate) comprising a stop means (i.e., axial sealing pads) having a stepped shape. As depicted in Figures 3, 5, and 8—and as set forth in amended

independent claim 2—the subject invention includes a stop means 42, 42a that extends along a circumferential edge of the reinforcing unit 40, 40a. The stop means 42, 42a extend circumferentially along the transverse axis of the body part.

In contrast, Bridges requires axial sealing pads 20 that extend along axial edges of the plate and along the longitudinal axis of the coupling 50. Accordingly, Bridges does not disclose each and every element, including the limitations set forth in amended claim 2, and therefore must be removed as a §102(b) reference.

Bridges Fails to Disclose Graduated Body Part Wherein the Consistent Diameter of One Part is Greater than the Consistent Diameter of the Other Part

Bridges describes a coupling 50 defining annular recesses 55 spaced apart with respect to each other, and spaced apart from the circumferential edges of the coupling 50. The Examiner states that the annular recesses 55 of Bridges are equivalent to the stepped parts of the present body part.

In regard to claim 3, the Examiner argues that Bridges discloses a body part having a stepped part such that the upper and lower parts of the body part have different diameters. As illustrated in Figures 5 and 8, and set forth in amended claim 3, the subject invention includes a body part 10, 10a wherein the upper and lower parts have consistent diameters. The body part 10, 10a also includes a stepped part 12a separating the upper and lower parts. The stepped part results in upper and lower parts that are graduated with respect to one another such that the diameter of the body part increases from the upper part to the lower part of the body part. Accordingly, the diameter of one part is necessarily greater than the diameter of the other part as a result of the graduated stepped part.

In contrast, Bridges discloses a coupling wherein each of the upper and lower parts has inconsistent diameters. Moreover Bridges discloses a coupling having upper and lower parts, wherein each part has diameters that differ, but each part has at least one

diameter that is identical to the other part. Thus, the upper and lower parts of the Bridges' coupling 50 are not graduated with respect to one another. Accordingly, Bridges does not disclose each and every element, including the limitations set forth in amended claim 3, and therefore must be removed as a §102(b) reference.

Bridges Fails to Disclose Close Contact Means Extending Longitudinally Along the Surface of the Sealing Unit

Bridges discloses gaskets 60 that extend circumferentially within the annular recesses 55 and around the interior of the coupling 50. Bridges further describes circumferential sealing pads 40 on the sealing plate 10 that likewise extend along a circumferential edge of the plate and around a portion of the circumference of the coupling. The gaskets 60 and circumferential sealing pads 40 extend transverse to the longitudinal axes of the sealing plate 10 and the coupling 50. The Examiner states that the gaskets 60 and circumferential sealing pads 40 are equivalent to the close contact means 50, 50a of the present invention.

With respect to claim 5, the Examiner alleges that Bridges discloses a sealing unit having a close contact means to increase a contact force at a contact surface. As set forth in amended claim 5, the present invention includes a close contact means that extends longitudinally along the surface of the sealing unit. Further, the close contact means are spaced apart. This is clearly illustrated in Figures 4 and 6. Stated differently, the close contact means 50, 50a of the present invention extends parallel—not transverse—to the longitudinal axis of the reinforcing unit 40, 40a and body part 10, 10a. In other words, the close contact means do not extend circumferentially with respect to the body part or reinforcing unit.

In contrast, the gaskets 60 and circumferential sealing pads 40 (alleged contact means) of Bridges extend transverse (i.e., perpendicular) to the longitudinal axis of the sealing plate 10 and the coupling 50. Thus Bridges fails to disclose a close contact means

that extends longitudinally along the surface of the sealing unit. Accordingly, Bridges does not disclose each and every element, including the limitations set forth in amended claim 5, and therefore must be removed as a §102(b) reference.

Bridges Fails to Disclose a Positioning Means on the Surface of the Reinforcing Unit

Applicant submits new dependent claim 7 to further distinguish the present invention from the cited art. As set forth in new claim 7 and supported by Paragraph [0028], the reinforcing unit 40, 40a further includes positioning means 43, 43a that extend longitudinally along a portion of the outer surface of the reinforcing unit (see Figures 4 and 8). The positioning means 43, 43a has a stepped shape and serves to position the reinforcing unit 40, 40a horizontally with respect to the body part 10, 10a. During assembly, the stepped shape of the positioning means 43, 43a aligns with the longitudinal slot defined by the axial edges of the body part 10, 10a. In one embodiment, the positioning means 43, 43a is a line extending longitudinally along the outer surface of the reinforcing unit 40, 40a.

Bridges fails to disclose a positioning means having a stepped shape that extends along the outer surface of the reinforcing unit, wherein the positioning means aligns with longitudinal slot or axial slot of the body part. Thus, new claim 7 includes patentable subject matter.

Amended Independent Claim 1 is Patentable

Amended independent claim 1 now recites a pipe joint having a body part, a coupling part, locking means, and a reinforcing unit comprising a separate curved plate, wherein a circumferential edge of the body part and a circumferential edge of the reinforcing unit are substantially coplanar with respect to the transverse axes of the body part and reinforcing unit. Bridges discloses circumferential edges of the sealing plate 10 and coupling 50 that are offset with respect to one another and not coplanar with respect to transverse axes of the coupling 50 and sealing plate 10. Thus, Applicants submit that amended claim 1 is not anticipated by Bridges and is now allowable.

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CONCLUSION

Based on foregoing amendments and arguments, Applicant submits that pending Claims 1-7 are now in immediate condition for allowance, and the same is respectfully requested.

Respectfully submitted,

//Jesse B. Ashe, III//

Jesse B. Ashe, III
Registration No. 44,513

021176
Summa, Allan, and Additon, P.A.
11610 North Community House Road
Suite 200
Charlotte, NC 28277-2162
Telephone: 704-945-6703
Facsimile: 704-945-6735
File No.: 1114.004